WHAT IS CLAIMED IS:

1. An optical subscriber system comprising: station equipment: a plurality of subscriber units; a transmission line for transmitting trailing signals from the station equipment to the plurality of subscriber units and transmitting leading signals from the plurality of subscriber units to the station equipment; and a star coupler for branching trailing signals and combining the leading signals,

the station equipment comprising a transmission line distance monitor/processor unit which sends a distance measuring control signal to each of the subscriber units, measures, based on a distance measuring signal returned from each of the subscriber units, the transmission line distance between the station equipment and each of the subscriber units, and judges whether the transmission line distance is larger or smaller than a reference value.

2. The optical subscriber system according to claim 1, wherein the station equipment further comprises a trailing signal multiplexer and a leading signal separator and functions to multiplex the distance measuring control signal, generated in the transmission line distance monitor/processor unit, in the trailing signal mulipexer to prepare a trailing signal, which is then sent to each of the subscriber units, and to separate, from a leading signal returned from each of the subscriber units, a distance measuring signal, in the leading signal separator, which is then sent to the transmission line

distance monitor/processor unit.

3. The optical subscriber system according to claim 2, wherein

the transmission line distance monitor/processor unit comprises a distance measuring control signal generator, a distance measuring section, and a distance judgment section, and

the distance measuring control signal generated in the distance measuring control signal generator is multiplexed in the trailing signal multiplexer to prepare a trailing signal, which is then sent to each of the subscriber units, and a distance measuring signal is separated from a leading signal, returned from each of the subscriber units, in the leading signal separator to prepare a distance measuring signal that is then input into the distance measuring section which sends a distance signal to the distance judgment section for judging whether the transmission line distance is larger or smaller than a reference value.

4. The optical subscriber system according to any one of claims 1 to 3, which, when the transmission line distance is larger than the reference value, issues an alarm.

5. A method for monitoring the transmission line distance between station equipment and each of a plurality of subscriber units in an optical subscriber system comprising: station equipment; a plurality of subscriber units; a transmission line

for transmitting trailing signals from the station equipment to the plurality of subscriber units and transmitting leading signals from the plurality of subscriber units to the station equipment; and a star coupler for branching trailing signals and combining the leading signals, said method comprising the steps of:

sending a distance measuring control signal from the station equipment to each of the subscriber units;

measuring the transmission line distance based on a distance measuring signal returned from each of the subscriber units; and

judging whether the transmission line distance is larger or smaller than a reference value.

6. The method according to claim 5, wherein

the station equipment comprises: a transmission line distance monitor/processor unit comprising a distance measuring control signal generator, a distance measuring section, and a distance judgment section; a trailing signal multiplexer; and a leading signal separator, and

a distance measuring control signal generated in the distance measuring control signal generator is multiplexed in the trailing signal multiplexer to prepare a trailing signal which is then sent to each of the subscriber units.

7. The method according to claim 6, wherein

a distance measuring signal is separated from a leading signal, returned from each of the subscriber units, in the

leading signal separator to prepare a distance measuring signal that is then input into the distance measuring section which sends a distance signal to the distance judgment section for judging whether the transmission line distance is larger or smaller than a reference value.

8. The method according to any one of claims 5 to 7, wherein, when the transmission line distance is larger than the reference value, an alarm is issued.